

UNIVERSITY OF ALBERTA LIBRARY



0 0004 0546 640

*Forest Inventory Series  
Report #2*

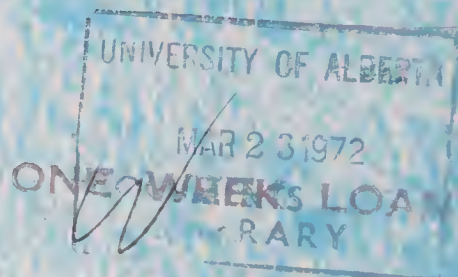
GENERAL RESOURCES

# FOREST RESOURCES

*of the*

## Prince Albert Area

*of Saskatchewan*



SD  
2  
S25  
S252  
no. 2  
1953

**Forestry Branch**

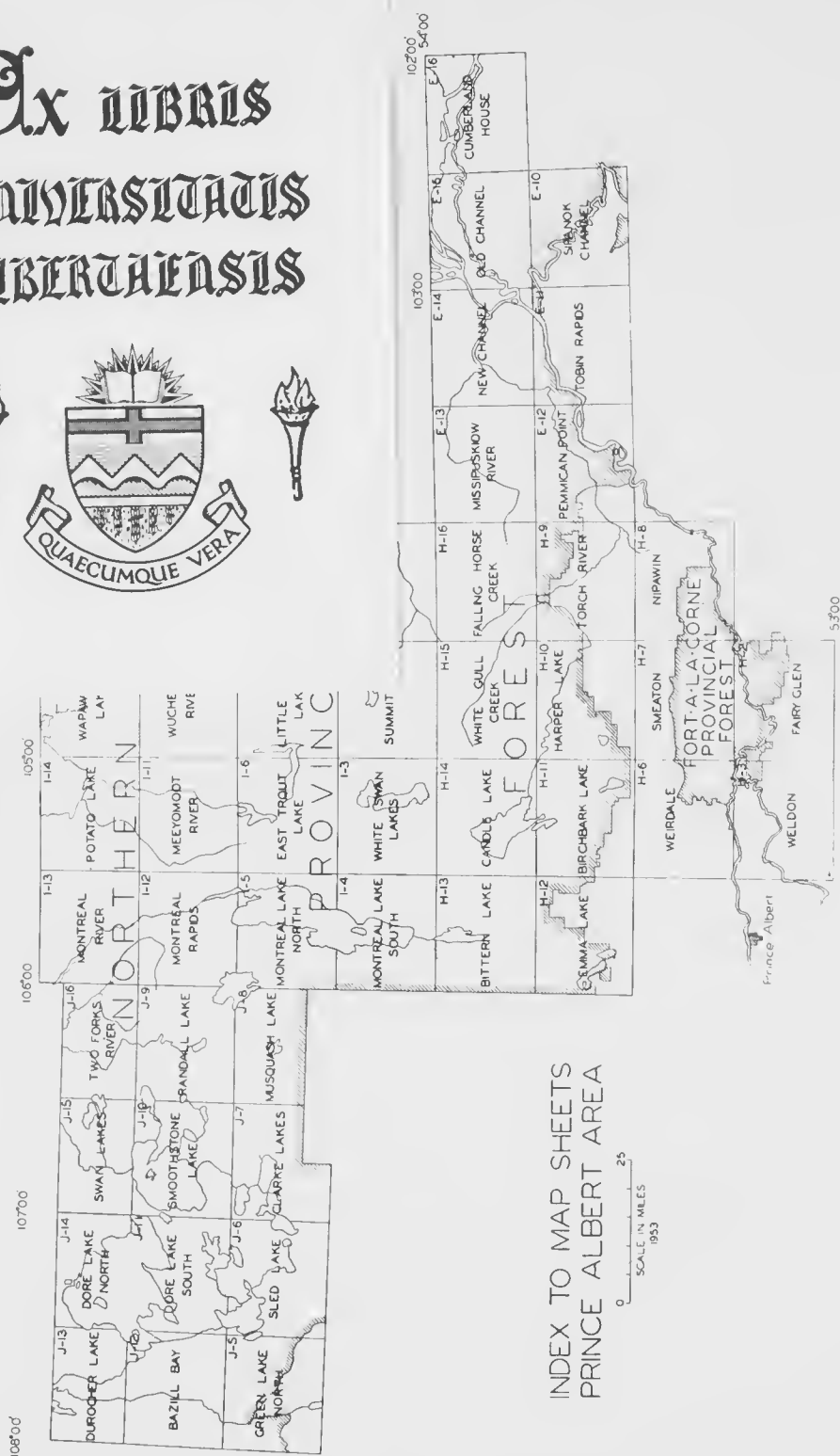
DEPARTMENT OF NATURAL RESOURCES  
PROVINCE OF SASKATCHEWAN

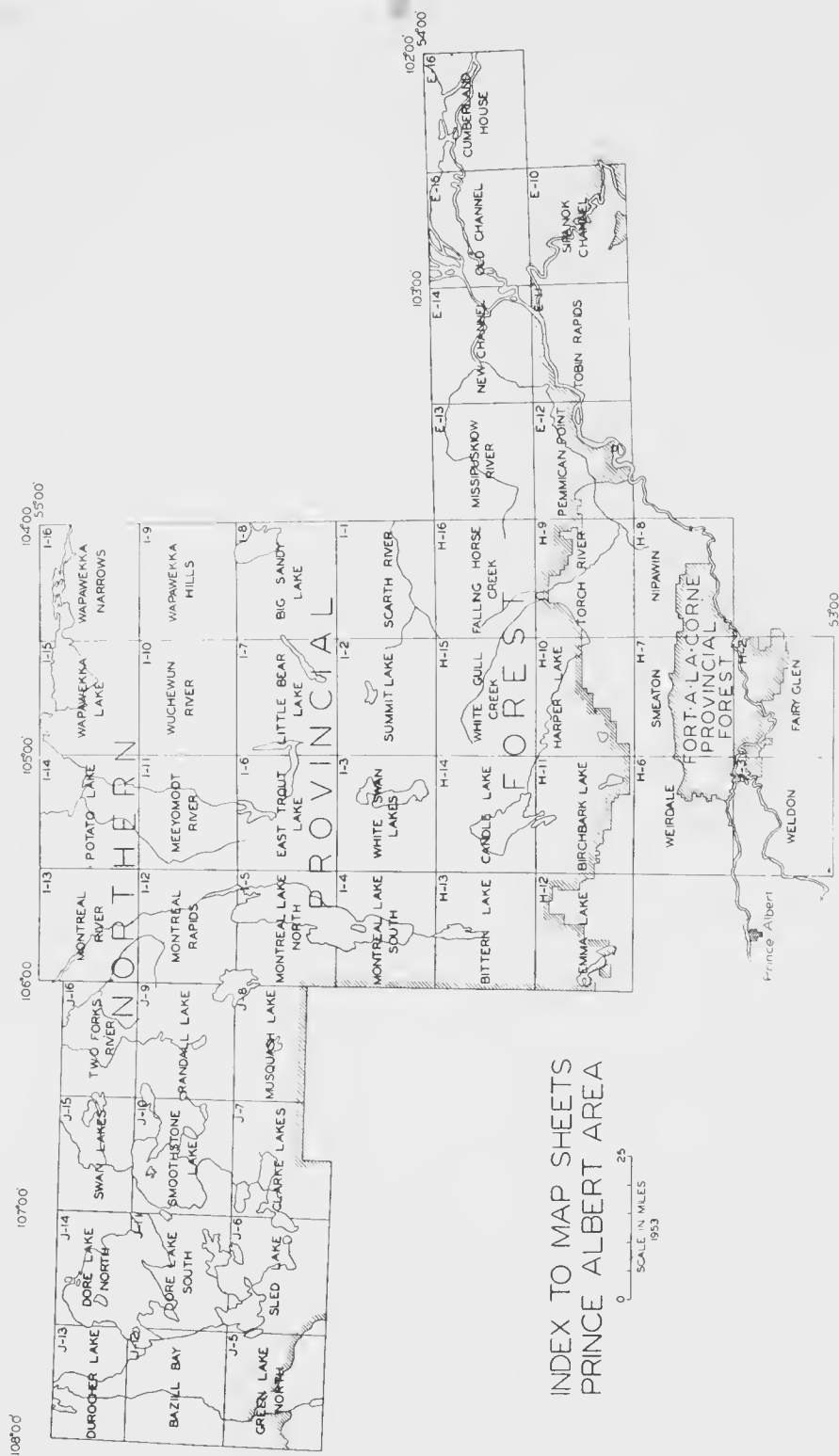


1953

SCI

# Ex libris UNIVERSITATIS ALBERTENSIS





FOREST RESOURCES  
of the  
Prince Albert Area  
of Saskatchewan

Forest Inventory Series

Report No. 2

DEPARTMENT OF NATURAL RESOURCES  
PROVINCE OF SASKATCHEWAN

1953

HON. J. H. BROCKELBANK  
Minister

C. A. L. HOGG  
Deputy Minister

E. J. MARSHALL  
Director of Forests

Prepared by Forest Inventory Division M. N. PALLEY, Forester-in-Charge.

Field inventory, volume tables and computations supervised by J. M. ATKINSON, assisted by D. G. WYLLIE.

Growth surveys by A. KABZEMS.

Photo interpretation by D. E. PRYCE, J. R. McMURDO and H. A. PEACOCK.

Field inventory by S. H. SHANNON, D. E. PRYCE, H. A. PEACOCK, J. M. ATKINSON, J. R. McMURDO, J. P. McKAY, A. G. RUSSELL, H. J. PAUL, D. M. TAYLOR and D. NOWLAN.

Computations by A. G. RUSSELL, R. R. McMILLAN, E. C. WYLDMAN, V. J. STUDER, D. D. DEETS, R. HARVEY, E. W. HEWKO.

Lithographed map production supervised by H. J. PAUL.

Base maps by L. R. KERNAGHAN.

Drafting of maps and charts by S. F. TICKNER.

Report writing by M. N. PALLEY.

Photo Credits—Thanks are extended to T. MORRELL, R. F. ARNOLD, F. BARD, A. KABZEMS and the Northern Wood Preservers Limited for making photographs available.

## TABLE OF CONTENTS

	Page
The Saskatchewan Forest Inventory .....	5
The Prince Albert Area .....	6
The Lumber Industry Ranks First .....	8
Pulpwood—Green and Fire-Killed .....	9
The North Country is Opening Up .....	10
Fire Protection is Emphasized .....	11
Poles for Rural Electrification .....	12
Other Wood-Using Industries in Prince Albert .....	13
Forest Area .....	14
Sawtimber Volume .....	16
Cordwood Volume .....	17
Cubic Foot Volume .....	19
Current Growth .....	19
Methods of Survey .....	29
Accuracy of Data .....	30
Definition of Terms .....	30
List of Species .....	32

## LIST OF TABLES

	Page
Table 1. Land classification in the Prince Albert area: 1951 .....	20
Table 2. Areas of productive forest land in Provincial Forests of the Prince Albert Area, by cover types and stand-size classes: 1951 .....	21
Table 3. Land classification of the Prince Albert area by map sheets .....	22
Table 4. Sawtimber volume by species and stand-size classes in Provincial Forests of the Prince Albert area: 1951 .....	24
Table 5. Cordwood volume by species and stand-size classes in Provincial Forests of the Prince Albert area: 1951 .....	24
Table 6. Cubic foot volume by species and tree diameter groups in Provincial Forests of the Prince Albert area: 1951 .....	25
Table 7. Average volume per acre of productive forest by stand-size class and tree diameter groups in Provincial Forests of the Prince Albert area: 1951 .....	25
Table 8. Wood volume in Provincial Forests of the Prince Albert area by map sheets: 1951 .....	26
Table 9. Periodic annual volume increment by species and tree diameter groups in the Prince Albert area: 1951 .....	28

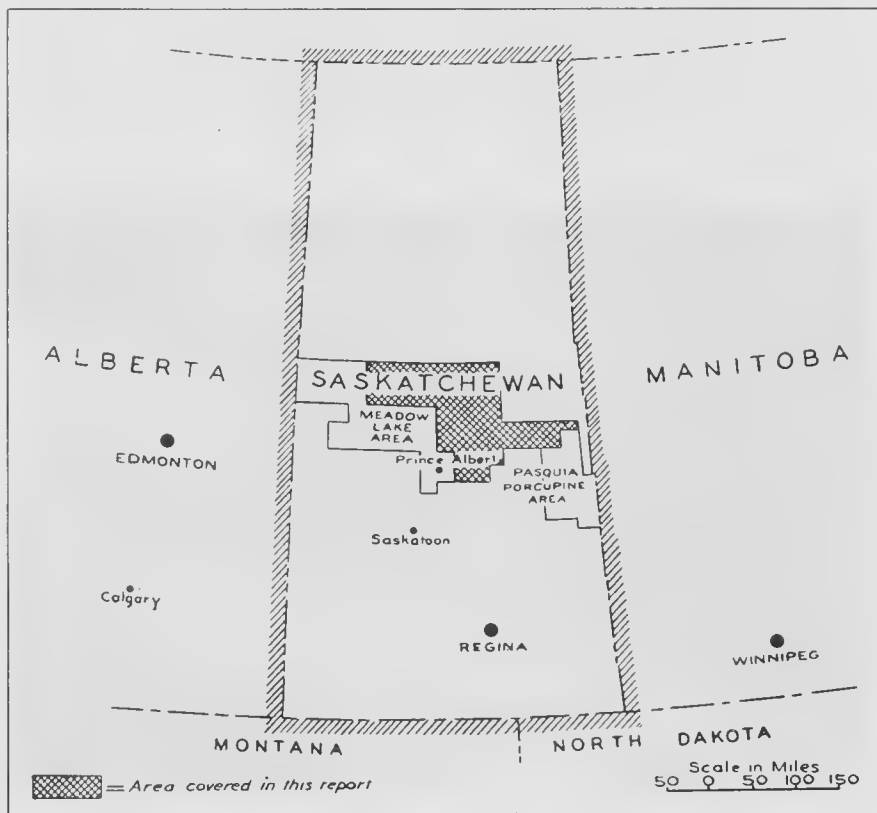


## THE SASKATCHEWAN FOREST INVENTORY

In fulfillment of a recommendation of the Saskatchewan Royal Commission on Forestry of 1947 an inventory of forest land and timber growing stock is being carried out by the Forestry Branch, Department of Natural Resources, with financial aid since 1951 from the Dominion Government under The Canada Forestry Act.

This publication illustrates one phase of the work of the Forest Inventory Project—securing the basic forest statistics. These statistics arise out of field sampling of forest stands classified on air photographs. Forestry maps lithographed in four colours represent a second phase of the activities of the Inventory. Thirty-four such map sheets have been issued to date. The rate of growth of Saskatchewan's forests is also being investigated, as still another phase of the Forest Inventory. A bulletin on the growth and yield of black spruce in Saskatchewan was published recently.

The Prince Albert area is the second of three areas to be surveyed. The statistics presented apply only to productive forest land in statutory Provincial Forests in the Prince Albert area. The Pasquia-Porcupine report appeared last year and a report on the Meadow Lake area is planned at a later date. Following completion of these three statistical reports, a more comprehensive report on the forest situation in Saskatchewan, including information on growth, drain and problems of utilization will be published.





## THE PRINCE ALBERT AREA

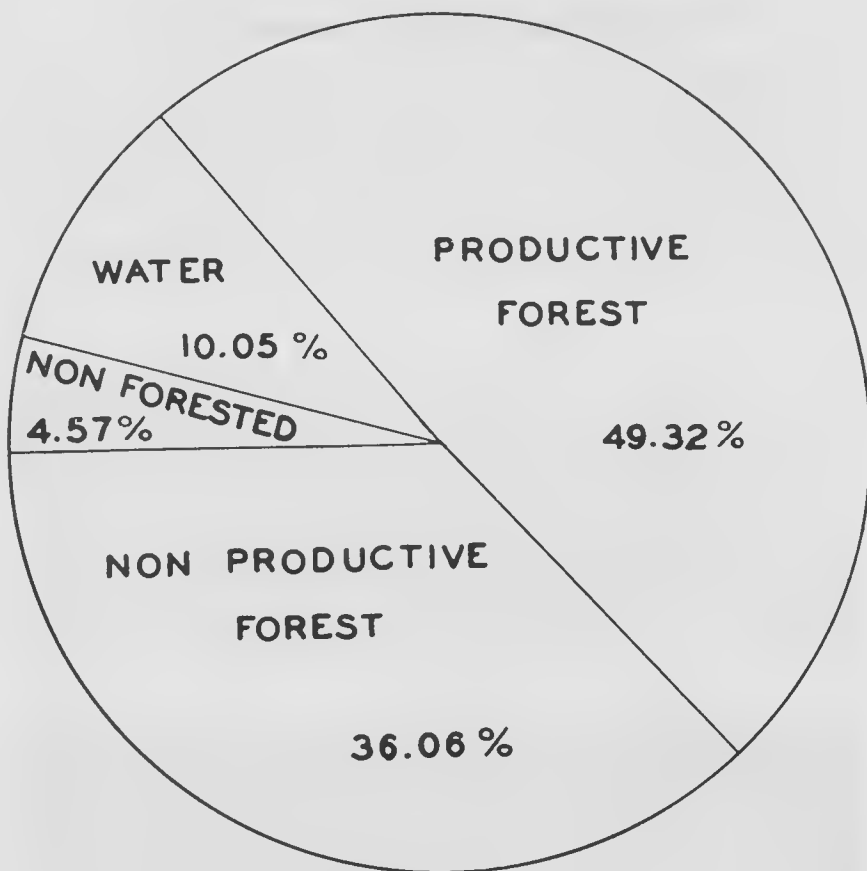
The Prince Albert area, as here described, occupies a portion of the land enclosed between 53 degrees and 55 degrees latitude and 102 degrees and 108 degrees longitude. It has been treated as one unit for inventory purposes, but comprises three sub-divisions which can be distinguished on the basis of stand composition. Reference to the generalized type map in the back cover of this booklet shows a zone of mixed types comparable to the forests of the Pasquia-Porcupine area in some respects. There is also a zone of predominantly coniferous stands in the north central portion of the area, where black spruce and jack pine predominate. Finally, the forests of the lower Saskatchewan River to the northeast have a special hardwood association with a greater variety of tree species and a more luxuriant growth of trees and lower vegetation.

In the Prince Albert area there are 4.3 million acres of productive forest land in Provincial Forests. Non-productive forest land and non-forested land within the Provincial Forest boundaries in the area amount to another 3.6 million acres. The non-productive forest land tends to be concentrated in certain parts of the Prince Albert area where poor drainage is prevalent.

The area takes its name from the city of Prince Albert, the leading railway and population centre of this part of the province, to which most of the area here described is economically tributary. Prince Albert has a population of 17,067 (1951 census) and is located on the North Saskatchewan River, 30 miles above the point where that river joins with the South Saskatchewan.

Farming has advanced about as far into the forests of the Prince Albert area as good land use dictates. Fires of the decade of the 1930's associated with dry years and the influx of thousands of settlers from the south have left large areas of land supporting only young reproduction. In other parts of the area older stands are present in satisfactory proportions.





## AREA DISTRIBUTION

(Source - Table 1)

The climate of the area is sub-humid with approximately 16 inches of precipitation annually, more than half of which comes in the period from June to September. The growing season is fairly short but this is balanced by the long summer growing days in this latitude. Extremely low temperatures occur in the winter months. Temperatures as low as 40 degrees below zero Fahrenheit are recorded each year. Winter is favoured as the season for logging over frozen terrain.

The relief of the area is moderate and elevations over the area average about 1,600 feet above sea level. The lowest points in the area to the northeast are below 1,000 feet, while the highest recorded elevations in the coniferous region are approximately 2,200 feet.

## THE LUMBER INDUSTRY RANKS FIRST

In the Prince Albert area the sawmill commonly goes to the timber. A mill like the one shown can produce a million board feet of white spruce in a winter. The lumber is hauled out to rail for air-drying and planing prior to shipment to the consumer. The lumber industry is the chief forest industry of the area, in value of production and in men employed. There is one large permanent mill with a round log gang saw at the town of Big River.

White spruce in mature stands like those shown averages 10,000 board feet per acre in trees 10 inches in diameter and over. It has been necessary to limit the production of white spruce to 18 million board feet a year in the Prince Albert district to prevent exhaustion of the supply before younger stands have reached harvesting age.

Skillful felling of trees, like that illustrated here, facilitates skidding of the trees in their full lengths to the mill where they are cut into logs and sawn into lumber. Each tree to be cut is marked by a forest officer. Low stumps and lopping of the branches into small pieces which can decay more readily are regulation practice.



## PULPWOOD — GREEN AND FIRE-KILLED

Black spruce pulpwood is the great untapped wood resource of the Prince Albert area. Along with jack pine it could provide northern fibre in abundance for the manufacture of pulp in Saskatchewan.

Cutting of pulpwood fluctuates widely and is controlled by the unstable export market for wood. In recent years the production in the Prince Albert area has varied from five to fifty thousand cords annually. This wood goes to mills in Manitoba, Ontario and Wisconsin.

Salvage of fire-killed spruce is encouraged. This class of wood has high acceptance in the trade and can be shipped at lower rates because it is dry. Sap-peeled green wood, after seasoning, also can travel economically to market when the industry is buying.



## THE NORTH COUNTRY IS OPENING UP

From the road camp pictured here 34 miles of access road was built into virgin country in the summer of 1952. This new road forms part of a network of 1,500 miles of forest roads and trails being maintained, improved and added to each year. The new roads are making it possible to harvest timber stands in formerly inaccessible areas.

A bulldozer on a special semi-trailer can roll to a forest fire faster than it can travel there under its own power. The Department of Natural Resources owns six such units capable of transporting heavy equipment and operates 26 crawler-type tractors in its road-building and fire-fighting activities.



## FIRE PROTECTION IS EMPHASIZED

At the present time fires are fought with bulldozers in the Prince Albert area but there is still a place on the fire-line for a good man with a shovel. Quick action on fires in roadless areas is taken by dispatching parachute fire fighters, the Saskatchewan Smokejumpers, one of whom is pictured here.

During the fire hazard season constant watch is kept at 21 look-out towers overlooking the Prince Albert area. All of these but one are 80-foot steel towers. Air patrols for fire detection are also carried out. Field men of the department attend fire fighting schools to improve their ability to deal effectively with fires. Two-way radio connections are maintained by all look-outs, fire control airplanes, headquarters and often the motor vehicles of the forest officers.

The public is constantly reminded of the need for care with fire through radio and newspaper messages and the observance of a Forest Conservation Week each year. One Conservation Officer devotes his full time to visiting schools adjoining the forest and helping to build a conservation-minded body of young people.



## POLES FOR RURAL ELECTRIFICATION

The forests of the Prince Albert area are contributing the poles for farm electrification in Saskatchewan. Production of these poles is at the rate of about 80,000 each year.

In forest stands up to 140 miles in distance from Prince Albert suitable jack pine trees are selected and cut into poles. Following the long truck haul to a wood preserving plant at Prince Albert the poles are peeled and placed in piles for seasoning. They are then pressure-treated with creosote to insure a long life of service and shipped to the points where they are needed.

The pole industry has met a definite local need by utilizing a local raw material and processing it in the province. Pole production has helped to offset the adverse economic effect of a reduced output of lumber and ties.



## OTHER WOOD-USING INDUSTRIES IN PRINCE ALBERT

Wood for containers is manufactured at the Prince Albert Box Factory, where grain doors, boxes and cleats are produced. The annual harvest of Saskatchewan grain is shipped out to market in freight cars and each must be closed with a grain door. Production at the Box Factory in a recent year was 9 million board feet and employees numbered 115. Custom planing is also carried on at the plant.

The plywood plant seen in the aerial view is also operating at present at the edge of Prince Albert. It produces utility grades of plywood made from rotary-cut poplar veneer. Much of the output of the plant is sent to eastern Canada for use in floor underlays. The trimmings from the logs are used to power the plant and the cores left after peeling are shipped to a plant outside the province manufacturing wallboard.







## FOREST AREA

Softwood cover types occupy more of the productive forest land of the Prince Albert area than either the mixed or hardwood cover types. Of the 4.3 million productive acres, 1.8 million are softwood, largely in the merchantable size class of 30 to 50 feet in stand height. Among the softwoods, the spruce cover types cover more area than do the pine, in the proportion of four to three.

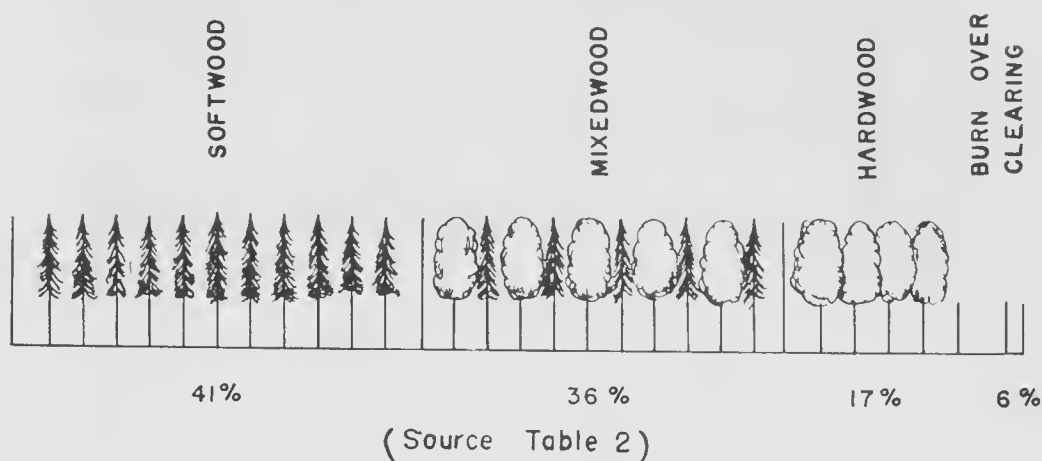
The mixed stands are second most numerous. Large areas in the cordwood and reproduction classes indicate a good representation in the future forest of these desirable and valuable mixed types. Some of the largest and best quality white spruce timber occurs in the mixed types. The pure hardwood cover types have the most even distribution by size classes. Much of the hardwood sawtimber occurs along the flood plains of the Saskatchewan River, over 100 miles downstream from Prince Albert.

Smaller size classes predominate in the Prince Albert area. Nearly three quarters of the productive area is occupied by stands under 50 feet in height. This condition reflects the youth of much of the tree growth present and also the large area of black spruce stands which do not often exceed 50 feet at maturity. Sawtimber stands cover just 125,000 acres or 3 per cent of the productive area. There are 1.5 million acres in the reproduction class, the new growth following the fires of the past few decades.

## AREA DISTRIBUTION

### BY COVER TYPE

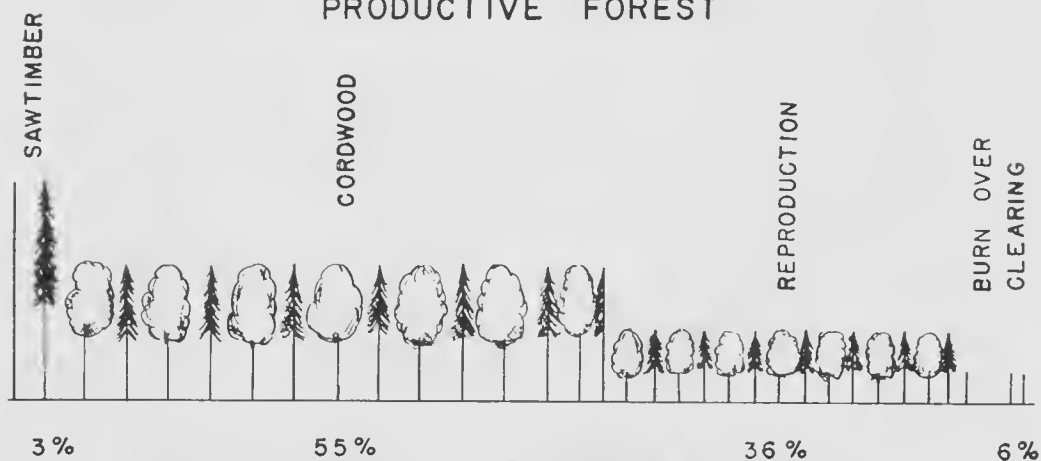
#### PRODUCTIVE FOREST



## AREA DISTRIBUTION

### BY SIZE CLASS

#### PRODUCTIVE FOREST

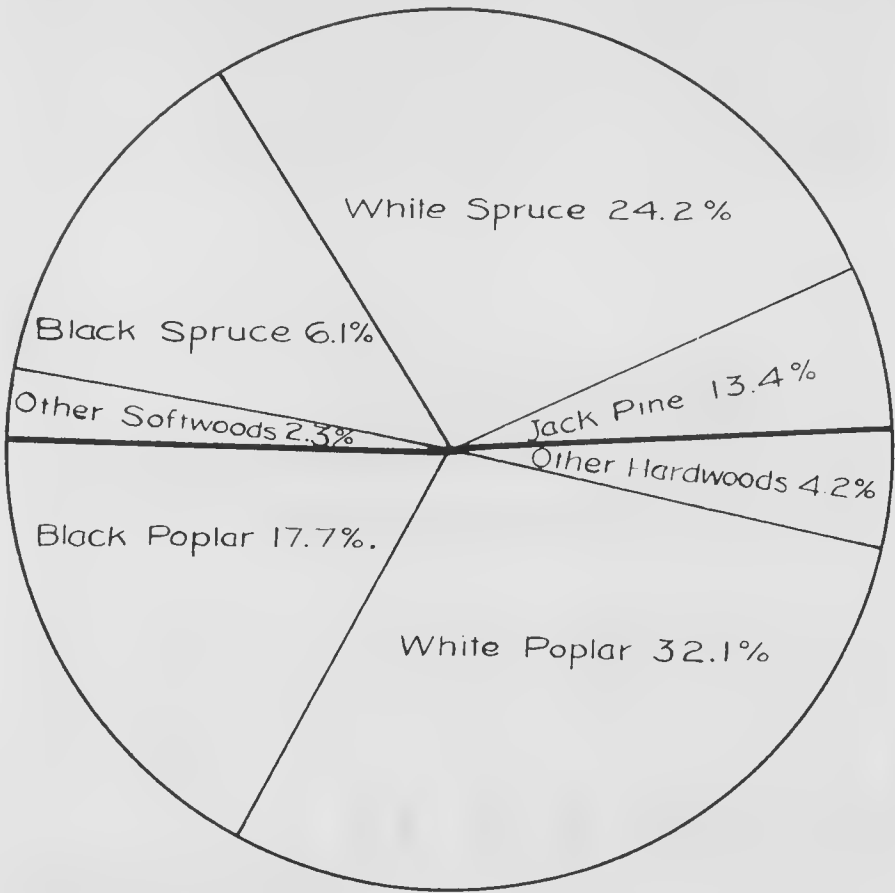


Sawtimber Volume

There is nearly 4 billion board feet of sawtimber in trees 10 inches and over in the Prince Albert area. Of this amount 954 million board feet is white spruce, the species on which the commercial lumber industry is based. Operable volumes of white spruce, which may be roughly equated with the timber in stands 70 feet and over in the air photo classification, amount to just 439 million board feet. The 527 million board feet of jack pine is at present finding its highest use in the form of power poles and railway ties.

An estimate of nearly 2 billion board feet net scale of the poplars includes marginal logs and trees and all grades of material. Many stands which yield good quality poplar lumber can be found.

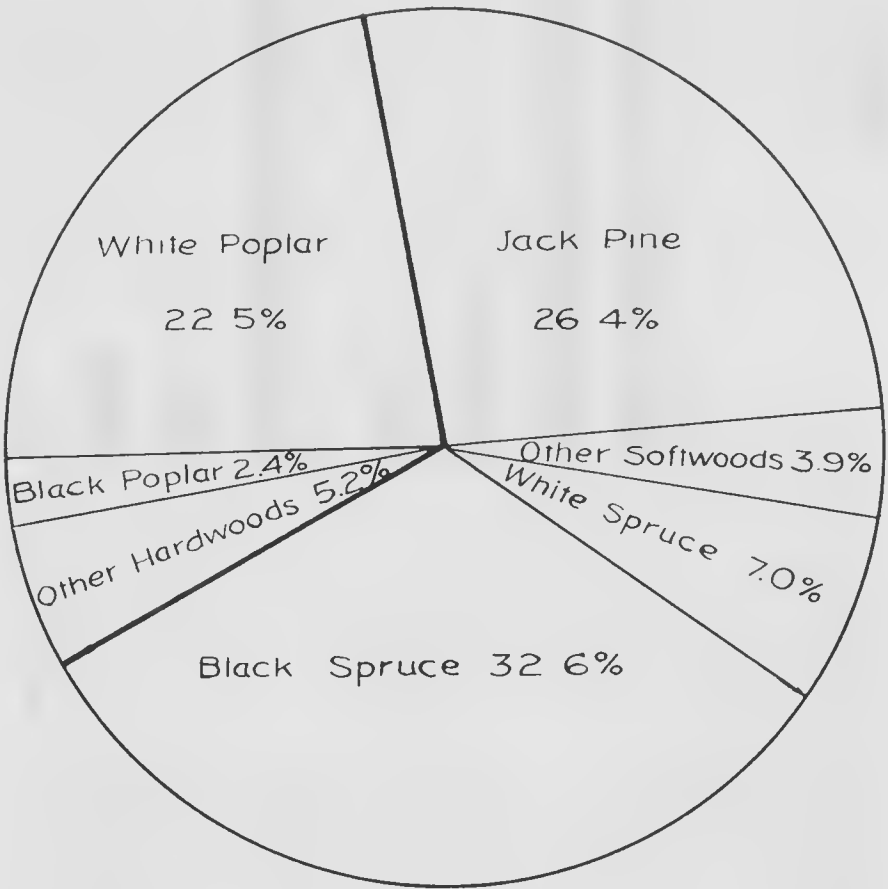
There is an average of 910 board feet of sawtimber per acre, over the whole productive area. In terms of sawtimber areas alone the average volume per acre, softwoods and hardwoods both included, is over 10,000 board feet per acre.



SAWTIMBER VOLUME

Cordwood Volume — Smaller Trees

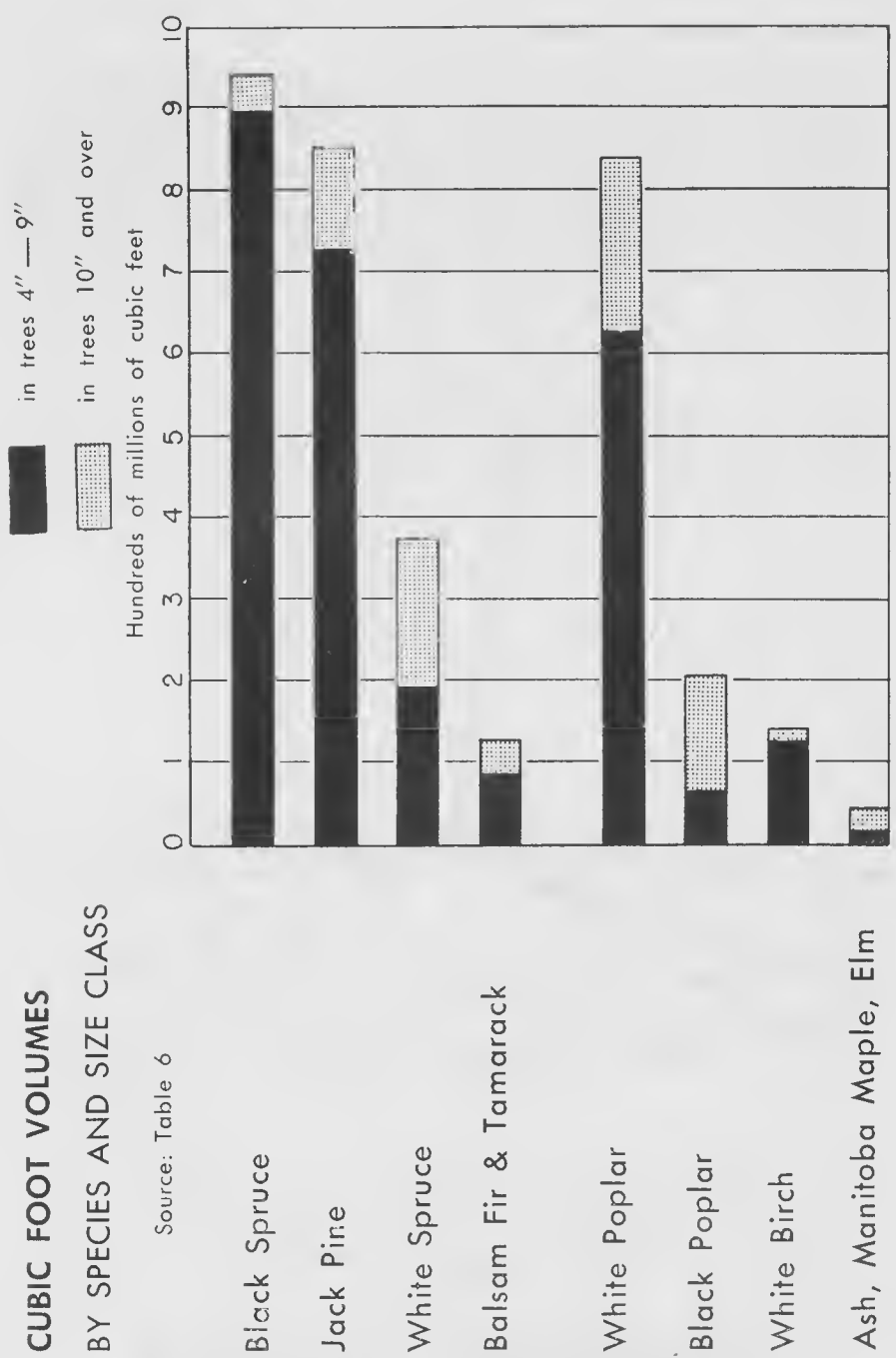
Expressed in standard cords there are 32.4 million cords of wood in trees 4 to 9 inches in diameter. Nearly 13 million cords of the spruces, 8.6 million of jack pine and 8 million cords of the poplars make up most of this total. There is nearly five times as much black spruce in this size-class as white spruce. On the average, every productive acre in the Prince Albert area contains 7.5 cords of wood in trees in the 4 to 9 inch class. The cordwood size-class stands, taken alone, average 12.4 cords per acre in trees under 10 inches in diameter.



CORDWOOD VOLUME

# CUBIC FOOT VOLUMES BY SPECIES AND SIZE CLASS

Source: Table 6



## Cubic Foot Volume

There are 3.5 billion cubic feet of merchantable wood in the Prince Albert area in all. Two-thirds of this wood is in the softwoods and one-third is in the hardwoods. Black spruce is the leading species. Together with white spruce it makes up 36 per cent of the total timber stand. There is nearly as much jack pine as black spruce. Balsam fir and tamarack amount to only 3.6 per cent of the commercial volume together.

The chief hardwood is white poplar, amounting to one quarter of the total stand of all species. Black poplar at 5.7 per cent and white birch with 4.0 per cent follow. Manitoba maple, elm and green ash are present in very small proportions only.

Cubic foot volumes allow a comparison of the wood in trees 4 to 9 inches in diameter (otherwise expressed in cords) and the wood in trees 10 inches and over in diameter (otherwise expressed in board feet). Such a comparison shows that 78.5 per cent of the wood is in the 4 to 9 inch class. White spruce is the only softwood species in which the volume of trees in the 10 inch and over size-class approaches the volume in the 4 to 9 inch class.

The average stand per productive acre, all size-classes and conditions included, is 811 cubic feet. Sawtimber areas carry 2,425 cubic feet per acre on the average, cordwood areas 1,271 cubic feet and reproduction areas 114 cubic feet.

## CURRENT GROWTH

The productive forests of the Prince Albert area covering approximately 4,000,000 acres are putting on growth currently at the rate of 100 million cubic feet annually, after making allowances for natural mortality. Losses due to forest fires and outbreaks of destructive insects and diseases are not allowed for in these growth figures—such losses might reduce the effective growth by perhaps a quarter.

This relatively high rate of growth is an expression of the preponderance of the young and faster growing age classes in the forests of the region. Such a periodic growth rate can be used as a basis for calculations for a period of 10 or 15 years. It should be recalculated at the end of that period of time in the light of the stand conditions which exist at that time.

Size classes and economic possibilities will have a tendency to limit the amount of this growth actually available for cutting. Much of the growth will be concentrated on the smaller trees, whose utilization in the near future will depend on the existence of markets for pulpwood, fence posts and the like. Seventy-two per cent of the jack pine stands, for example, are in the 30 to 50 foot height class. They are fast growing stands 40 to 50 years old with trees up to 8 or 9 inches in diameter as a maximum. Such stands will yield pulpwood, mine props and boxwood, but little in the way of lumber, ties or poles for a number of years to come.

Table 9 shows the distribution of this growth by species and size-classes. Jack pine and black spruce together account for well over half the current increment. For convenience of interpretation growth has been expressed in cords and board feet, as well as in cubic feet. In these units the annual growth is one million cords in trees 4 to 9 inches and 65 million board feet in trees 10 inches and over, in the Prince Albert area.

TABLE 1—LAND CLASSIFICATION IN THE PRINCE ALBERT AREA: 1951

Class of Land	Amount In Acres	Per cent. of Provincial Forest Area
TOTAL AREA.....	10,557,822	
Provincial Forests, total.....	8,768,699	100.0
Land:		
Productive Forest.....	4,325,325	49.3
Non-Productive Forest.....	3,161,580	36.1
Non-Forested Land.....	401,239	4.6
Water.....	880,555	10.0
All Other Areas.....	1,789,123	
Settled Area.....	1,655,225	
National Park.....	104,301	
Indian Reserve.....	29,597	

TABLE 2—AREAS OF PRODUCTIVE FOREST LAND IN PROVINCIAL FORESTS OF THE  
PRINCE ALBERT AREA, BY COVER TYPES AND STAND—SIZE CLASSES: 1951  
(IN ACRES)

Cover Type	Total		Stand—size class			
	Area	Per cent. Produc- tive Forest	Sawtimber Over 70 feet tall	Cordwood		Reproduc- tion Under 30 feet
				50-70 feet	30-50 feet	
Softwood .....	1,758,410					
Spruce.....	995,577	23.0	19,661	84,970	638,776	252,170
Pine.....	762,833	17.6	1,046	100,792	522,158	138,837
Mixedwood.....	1,550,971	35.9	48,076	287,864	292,505	922,526
Hardwood .....	747,303	17.3	56,060	283,939	171,837	235,467
All Cover* Types.....	4,056,684		124,843	757,565	1,625,276	1,549,000
Per Cent. *.....		93.8	2.9	17.5	37.6	35.8

\*—Productive forest land of 4,325,325 acres also includes Burn-overs—243,705 acres (5.6%) and cleared areas—24,936 (0.6%).



TABLE 3—LAND CLASSIFICATION OF THE PRINCE ALBERT AREA BY MAP SHEETS  
(ACRES)

Map Sheet	Total Area	Area in Provincial Forest							
		Total Provincial Forest	Total Productive	Per cent. Productive	Productive Forest Area			Mixedwood Hardwood	Burn-over and Clearing
					Spruce	Pine			
E/10 Sipanok Channel	227,463	119,397	47,169	39.50	4,793		7,889	34,358	129
E/11 Jobin Rapids	227,463	44,108	30,078	68.19	2,730		19,374	7,974	
E/12 Pennitcan Point	227,468	138,379	76,887	55.56	17,747	6,831	24,611	18,485	9,213
E/13 Missipuskiow River	226,105	226,105	32,632	14.43	22,818	3,566	1,981	473	3,791
E/14 New Channel	226,105	226,105	75,202	33.25	19,916	3,748	16,260	20,245	15,033
E/15 Old Channel	226,105	225,977	67,188	29.73	2,454		7,356	50,359	7,019
E/16 Cumberland House	226,105	226,105	45,728	20.22	1,211		7,657	31,806	5,051
H/2 Fairy Glen	229,435	88,487	78,636	88.86	711	35,009	10,485	21,544	10,887
H/3 Weldon	229,435	15,229	11,695	76.79	624	4,662	2,400	1,863	2,146
H/6 Weirdale	228,802	45,145	29,274	64.84	1,238	11,363	7,870	3,563	5,240
H/7 Smeaton	228,802	138,547	112,476	81.18	8,807	59,729	19,871	22,831	1,235
H/8 Nipawin	228,802	54,894	46,868	85.37	2,488	16,918	7,695	16,988	2,779
H/9 Torch River	227,468	72,920	58,270	79.90	6,830	2,402	27,882	19,714	1,442
H/10 Harper Lake	227,468	147,737	70,488	47.71	8,391	15,834	38,529	4,511	3,223
H/11 Birchbark Lake	227,468	183,208	111,793	61.01	9,861	5,904	63,398	23,397	9,233
H/12 Emma Lake	227,468	108,764	74,890	68.85	2,354	965	39,752	31,691	128
H/13 Bittern Lake	226,105	225,570	127,968	56.73	28,126	10,457	77,067	12,229	89
H/14 Candle Lake	226,105	226,105	124,187	54.92	14,726	17,620	85,253	5,699	889
H/15 White Gull Creek	226,105	226,105	106,320	47.02	18,387	70,013	17,024	630	266
H/16 Falling Horse Creek	226,105	226,105	95,022	42.02	14,543	13,607	47,298	7,474	12,100
I/1 Scarth River	224,810	224,810	76,195	33.89	34,350	21,529	8,287	3,328	8,701
I/2 Summit Lake	224,810	224,810	153,977	68.49	28,833	79,970	28,751	13,019	3,401

I/3	White Swan Lake...	224,810	172,583	76.76	14,463	24,035	127,837	6,111	137
I/4	Montreal Lake South...	224,810	122,211	58.15	29,638	11,491	72,778	8,195	109
I/5	Montreal Lake North...	223,471	107,701	48.19	8,681	12,989	80,960	5,071	
I/6	East Trout Lake...	223,471	145,865	65.29	21,417	9,162	110,764	4,395	127
I/7	Little Bear Lake...	223,471	137,449	61.50	72,935	9,677	21,861	14,791	18,185
I/8	Big Sandy Lake...	223,471	117,111	52.40	62,969	59	19,406	7,739	26,938
I/9	Wapawekka Hills...	222,094	119,713	53.90	73,240	34,293	8,830	2,847	503
I/10	Wuchewun River...	222,094	99,768	44.92	69,097	11,147	14,476	5,048	
I/11	Meeyomoot River...	222,094	78,417	35.30	31,685	26,456	13,570	3,068	3,638
I/12	Montreal Rapids...	222,094	87,024	39.18	35,325	22,063	22,109	4,647	2,880
I/13	Montreal River...	220,749	83,412	37.78	23,134	24,953	15,677	9,041	10,607
I/14	Potato Lake...	220,749	59,007	26.73	17,995	17,056	16,408	6,519	1,029
I/15	Wapawekka Lake...	220,749	79,780	36.14	26,730	22,422	17,964	11,577	1,087
I/16	Wapawekka Narrows...	220,749	130,575	59.15	69,030	15,386	37,190	8,969	
J/5	Green Lake North...	223,471	74,813	55.53	7,754		25,098	41,844	117
J/6	Sled Lake...	223,471	106,804	47.79	5,065	750	75,596	25,306	87
J/7	Clarke Lakes...	223,471	73,220	39.20	13,134	4,316	33,026	10,167	12,577
J/8	Musquash Lake...	223,471	110,115	70.63	15,123	47,051	37,847	5,215	4,87
J/9	Randall Lake...	222,094	153,479	69.10	40,937	37,507	51,862	23,173	
J/10	Smoothstone Lake...	222,094	101,385	45.64	19,700	7,202	30,909	42,724	856
J/11	Dore Lake South...	222,094	83,578	37.63	13,910		37,880	31,788	
J/12	Bazill Bay...	222,094	100,485	45.24	8,931	986	28,267	62,203	98
J/13	Durocher Lake...	166,171	90,110	54.22	13,130	12,416	32,201	32,363	
J/14	Dore Lake North...	166,171	53,639	32.27	16,040	4,664	26,546	6,359	30
J/15	Swan Lakes...	166,171	104,231	62.72	10,364	666	19,389	14,095	59,717
J/16	Two Forks River...	166,171	79,907	48.08	23,212	25,959	5,827	1,867	23,042
TOTALS		10,557,882	4,325,325	49.35	995,577	762,833	1,550,971	747,303	268,641

TABLE 4—SAWTIMBER VOLUME BY SPECIES AND STAND-SIZE CLASSES IN PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA: 1951

(In thousands of board feet)

Species	In all areas		In Sawtimber area	In Cordwood area
	Amount	Per cent.	Over 70 feet high	30 to 70 feet
TOTAL SAWTIMBER.....	3,938,269	100.0	1,290,975	2,647,294
Softwoods, total.....	1,812,834	46.0	473,623	1,339,211
White spruce.....	954,066	24.2	438,984	515,082
Black spruce.....	240,218	6.1	10,075	230,143
Jack pine.....	526,918	13.4	9,154	517,764
Balsam fir.....	77,641	2.0	15,410	62,231
Tamarack.....	13,991	.3		43,991
Hardwoods, total.....	2,125,435	54.0	817,352	1,308,083
White poplar.....	1,265,813	32.1	307,523	958,290
Black poplar.....	698,813	17.7	447,694	251,119
White birch.....	66,606	1.7	19,558	47,048
Elm.....	77,785	2.0	37,497	40,288
Manitoba maple.....	14,620	.4	4,075	10,545
Green ash.....	1,798	.1	1,005	793

TABLE 5—CORDWOOD VOLUME BY SPECIES AND STAND-SIZE CLASSES IN PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA: 1951

(In thousands of cords)

Species	In all areas		In Sawtimber area	In Cordwood area	In Reproduction area
	Amount	Per cent.	Over 70 feet high	30 to 70 feet	Under 30 feet
TOTAL CORDWOOD ....	32,440	100.0	810	29,551	2,079
Softwoods, total.....	22,669	69.9	356	20,514	1,799
White spruce.....	2,278	7.0	201	2,073	4
Black spruce.....	10,545	32.5	40	9,259	1,246
Jack pine.....	8,569	26.4	36	8,284	249
Balsam fir.....	705	2.2	78	624	3
Tamarack.....	572	1.8	1	274	297
Hardwoods, total.....	9,771	30.1	454	9,037	280
White poplar.....	7,299	22.5	264	6,903	132
Black poplar.....	790	2.4	62	645	83
White birch.....	1,484	4.6	25	1,394	65
Manitoba maple.....	142	.4	71	71	..
Green ash.....	5	.....	2	3	..
Elm.....	51	.2	30	21	..

TABLE 6—CUBIC FOOT VOLUME BY SPECIES AND TREE DIAMETER GROUPS IN  
PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA: 1951

(In thousands of cubic feet)

Species	All diameters		Diameter groups	
	Amount	Per cent.	4-9 inches	10 inches and over
ALL SPECIES.....	3,507,586	100.0	2,754,607	752,979
Softwoods, total.....	2,292,712	65.36	1,923,904	368,808
White spruce.....	370,231	10.55	193,602	176,629
Black spruce.....	941,939	26.85	894,923	47,016
Jack pine.....	851,773	24.29	726,963	124,810
Balsam fir.....	77,161	2.20	59,879	17,282
Tamarack.....	51,608	1.47	48,537	3,071
Hardwoods, total.....	1,214,874	34.64	830,703	384,171
White poplar.....	839,752	23.94	620,441	219,311
Black poplar.....	201,495	5.74	67,152	134,343
White birch.....	139,363	3.98	126,174	13,189
Green ash.....	888	.02	459	429
Manitoba maple.....	14,794	.43	12,118	2,676
Elm.....	18,582	.53	4,359	14,223

TABLE 7—AVERAGE VOLUME PER ACRE OF PRODUCTIVE FOREST BY STAND SIZE-  
CLASSES AND TREE DIAMETER GROUPS IN PROVINCIAL FORESTS OF THE PRINCE  
ALBERT AREA: 1951

Stand-size class	All diameters (cubic feet)	Diameter groups-inches	
		4-9 inches (cords)	10 inches and over (board feet)
ALL SIZE CLASSES.....	811	7.5	910
Sawtimber.....	2,425	6.5	10,341
Cordwood.....	1,271	12.4	1,111
Reproduction.....	114	1.3	.....

TABLE 8—WOOD VOLUME IN PROVINCIAL FORESTS OF THE PRINCE ALBERT AREA BY MAP SHEETS: 1951

Map Sheet	Thousands of Board Feet			Thousands of Cords			Thousands of Cubic Feet		
	Total	Softwood	Hardwood	Total	Softwood	Hardwood	Total	Softwood	Hardwood
E/10 Sipanok Channel.....	139,353	39,898	99,455	170	85	85	38,625	13,435	25,190
E/11 Tobin Rapids.....	109,194	44,212	64,982	86	44	42	25,789	10,486	15,303
E/12 Pemman Point.....	133,320	61,487	71,833	689	395	294	80,517	42,646	37,871
E/13 Mississkiow River.....	26,845	20,337	6,508	331	294	37	4,339	29,132	3,339
E/14 New Channel.....	212,456	60,011	152,445	366	264	102	71,268	34,830	36,438
E/15 Old Channel.....	267,160	47,168	219,992	175	40	135	62,277	11,234	51,043
E/16 Cumberland House.....	186,856	35,493	151,363	131	40	91	44,429	9,349	35,080
H/2 Fairy Glen.....	33,786	22,444	11,342	504	324	180	50,331	32,895	17,436
H/3 Weldon.....	3,542	2,369	1,173	46	35	11	4,714	3,572	1,142
H/6 Weirdale.....	8,557	7,700	857	114	99	15	11,641	10,186	1,455
H/7 Smeaton.....	57,840	49,371	8,469	855	684	171	85,844	69,570	16,274
H/8 Nipawin.....	22,002	16,192	5,810	304	193	111	30,547	20,033	10,514
H/9 Torch River.....	85,298	36,028	49,270	413	177	236	51,006	22,026	28,980
H/10 Harper Lake.....	15,490	9,955	5,535	290	239	51	27,934	22,607	5,327
H/11 Birchbark Lake.....	59,916	25,329	34,587	463	241	222	50,652	25,623	25,029
H/12 Emma Lake.....	40,128	15,004	25,124	320	120	200	34,718	13,238	21,480
H/13 Bittern Lake.....	81,190	41,509	39,681	765	511	254	80,531	51,796	28,735
H/14 Candle Lake.....	104,542	56,933	47,609	695	519	176	78,747	55,263	23,484
H/15 White Gull Creek.....	53,788	46,895	6,893	1,029	932	97	99,549	90,063	9,486
H/16 Falling Horse Creek.....	70,064	44,480	25,584	569	432	137	62,027	45,824	16,203
I/1 Scarth River.....	32,170	22,848	9,322	797	688	109	74,457	63,605	10,852
I/2 Summit Lake.....	109,240	69,123	40,117	1,724	1,390	334	169,056	133,562	35,494
I/3 White Swan Lake.....	87,417	41,126	46,291	770	540	230	82,253	54,194	28,059
I/4 Montreal Lake South.....	62,221	34,760	27,461	703	523	180	71,629	51,464	20,165
I/5 Montreal Lake North.....	54,528	26,325	28,203	465	283	182	69,765	29,296	20,469
I/6 East Trout Lake.....	57,275	37,857	19,418	591	453	138	61,362	46,247	15,115

I/7 Little Bear Lake	55,759	30,735	25,024	1,170	946	224	110,363	86,832	23,531
I/8 Big Sandy Lake	79,429	48,688	30,741	1,152	916	236	113,304	87,889	25,415
I/9 Wapawekka Hills	23,462	20,283	3,179	930	857	73	84,132	77,360	6,772
I/10 Wuchewun River	32,009	22,976	9,033	847	717	130	78,488	65,857	12,631
I/11 Meeyomoot River	44,802	32,453	12,349	707	618	89	69,358	59,555	9,803
I/12 Montreal Rapids	43,496	30,331	13,165	851	724	127	81,382	68,173	13,209
I/13 Montreal River	71,037	45,210	25,827	888	685	203	89,694	67,934	21,760
I/14 Potato Lake	57,577	39,078	18,499	692	547	145	70,318	54,674	15,644
I/15 Wapawekka Lake	59,441	36,926	22,515	871	644	227	86,042	62,737	23,305
I/16 Wapawekka Narrows	54,143	38,307	15,836	1,111	913	198	105,419	85,738	19,681
J/5 Green Lake North	90,096	25,434	64,662	514	171	343	60,639	19,588	41,051
J/6 Sled Lake	121,348	42,385	78,963	805	345	460	90,786	37,597	53,189
J/7 Clarke Lakes	39,586	17,102	22,484	433	285	148	44,527	27,750	16,777
J/8 Musquash Lake	58,801	39,664	19,137	1,016	839	177	98,758	80,212	18,546
J/9 Randall Lake	81,048	50,984	30,064	1,365	1,081	284	132,401	102,848	29,553
J/10 Smoothstone Lake	179,738	69,228	110,510	1,411	592	819	153,399	63,907	89,492
J/11 Dore Lake South	191,415	80,986	110,429	1,059	392	667	125,706	48,888	76,818
J/12 Bazill Bay	160,982	42,383	118,599	808	240	568	98,727	28,752	69,975
J/13 Durocher Lake	82,150	22,869	59,281	616	304	312	68,038	30,571	37,467
J/14 Dore Lake North	137,100	61,720	75,380	530	342	188	70,755	40,932	29,823
J/15 Swan Lakes	104,260	52,610	51,650	491	229	262	61,759	30,034	31,725
J/16 Two Forks River	56,412	47,628	8,784	808	737	71	80,452	72,708	7,744
TOTALS	3,938,269	1,812,834	2,125,435	32,440	22,669	9,771	3,507,586	2,292,712	1,214,874

TABLE 9—PERIODIC ANNUAL VOLUME INCREMENT BY SPECIES AND TREE DIAMETER GROUPS IN THE PRINCE ALBERT AREA: 1951

Species	All diameters		Diameter groups-inches	
	Thousands of cubic feet	Per Cent.	4-9 inches Thousands of cords	10 inches and over Thousands of board feet*
ALL SPECIES.....	99,789	100.0	1,020	65,338
Softwoods, total.....	66,687	66.8	706	33,598
White spruce.....	7,229	7.2	55	12,686
Black spruce.....	26,707	26.8	300	6,080
Jack pine.....	29,921	30.0	322	12,924
Balsam fir.....	1,595	1.6	15	1,726
Tamarack.....	1,235	1.2	14	182
Hardwoods, total.....	33,102	33.2	314	31,740
White poplar.....	24,508	24.6	227	25,897
Black poplar.....	4,091	4.1	37	4,647
White birch.....	4,496	4.5	50	1,186
Elm.....	3	.....	.....	.....
Green ash.....	.....	.....	.....	.....
Manitoba maple.....	4	.....	.....	10

\*—Cubic feet converted to board feet, basis one cubic foot equal to five board feet.

## METHODS OF SURVEY



The area estimates given in this report are based on 100 per cent air photo type-mapping of all land in Provincial Forests in the survey area. Photos used were summer verticals taken in the period 1945-1952.

Productive forest land was mapped on the basis of softwood, mixedwood, and hardwood types and in four levels each of crown density and average height of dominant stand, with additional classes of disturbed stands being recognized. Spruce and pine types were differentiated in the softwoods.

One-fifth acre plots were located at random or along random lines apportioned among all the cover types mapped. There were 1,509 usable plots located and measured from 1948 to 1952

in the Prince Albert area. In addition 343 one-tenth acre plots in jack pine types measured in 1951 were used.

Local volume tables were prepared from appropriate standard tables. These volume tables were checked against the volumes of felled sample trees. Cull factors were based on the rot found in the randomized sample trees, which were cut down and bucked into 8 foot bolts. Average stand volumes were applied to the cover maps to produce the estimates in terms of net merchantable volume.

The statements on current growth are based on rates of growth developed in a series of special growth studies. Mixed stand growth figures were derived from empirical stand density yield tables based on 326 one-fifth acre plots. Figures for black spruce arose out of empirical yield tables for well-stocked stands based on the measurement of 150 one-fifth acre plots. Jack pine growth was calculated by the stand table method, forecasting the stand ten years hence through the use of increment borings and mortality records taken on 715 one-tenth acre plots. In all cases the results of the special growth studies were adapted to fit the stand tables which resulted in the course of the forest inventory volume sampling.



## ACCURACY OF DATA

Inaccuracies in the forest inventory estimates for the Prince Albert Area arise from two sources — errors in measurement and errors due to the accidents of sampling. Care was taken to minimize errors of measurement on the air photos and in the field. A proportion of the forest classification was verified in the field and all computations received a mechanical check. The error due to sampling can be described quantitatively.

On analysis it was found that the sampling error for 96 per cent of the merchantable stand volume in the Prince Albert area was + or — 2.2 per cent. Such a statement means that the total merchantable volume for the Area is within 2.2 per cent of the stated volume (barring errors in measurement), two chances out of three. On the basis of a probability of 19 chances out of 20, this per cent becomes + or — 4.3. The sampling error calculation represents the pooled sampling errors of three sampling blocks making up the Prince Albert Area, each in turn made up of numerous strata. These sampling error per cents apply to 3,371 million cubic feet and to over 3.5 million acres of productive forest land. The sampling error could not be formulated for the remaining volume and area, found largely in unmerchantable stands. The reliability of volumes for particular species and localities is less as the volumes and acreages involved become smaller. Such sub-totals serve to show relative but not absolute magnitudes. They should not be regarded as having the accuracy of the totals for the whole Area.

## DEFINITION OF TERMS

### Volume Classification

*Sawtimber*—Volume contained in trees 9.6 inches and over (diameter breast high) regardless of stand-size class in which they occur, expressed in board feet, International  $\frac{1}{4}$ " scale.

*Cordwood*—Volume of solid wood inside bark contained in trees 3.6 to 9.5 inches in diameter, expressed in standard cords of 128 cubic feet of stacked rough wood.

*Cubic Foot Volume*—Volume of solid wood inside bark of all trees 3.6 inches in diameter and over.

### *Limits of Merchantability*

For Sawtimber—Stump one foot, variable top diameter inside bark averaging 6 inches.

For Cordwood—Stump one foot, top diameter inside bark 3 inches.

*Net Merchantable Volume*—Merchantable volume of sound wood. Deductions for cull based on averaged measurements of felled sample trees. Volumes in this report are net merchantable.

## DEFINITION OF TERMS

### Area Classification

#### FOREST LAND AREA

*Productive Forest*—Land which will produce a forest crop of merchantable size and form within a reasonable period of time.

*Non-Productive Forest*—Land incapable of producing a forest crop of merchantable size within a reasonable period of time. Includes treed muskegs and a proportion of softwood stands judged to be stagnant.

*Non-Forested*—Includes open swamps, grassland, brush, rock, cultivated land and urban areas.

#### STAND-SIZE CLASSES

*Sawtimber Area*—Stands over 70 feet in height.

*Cordwood Area*—Stands averaging 30 to 70 feet in height.

*Reproduction Area*—Stands under 30 feet in height.

#### COVER TYPES

*Softwood*—Stands containing over 75 per cent softwoods by volume.

*Mixedwood*—Stands in which neither softwoods or hardwoods constitute 75 per cent of the stand volume.

*Hardwood*—Stands containing over 75 per cent hardwoods by volume.

#### MERCHANTABILITY

*Merchantable*—Stands over 30 feet in height.

*Young Growth*—Stands on productive forest land under 30 feet in height.

## LIST OF SPECIES

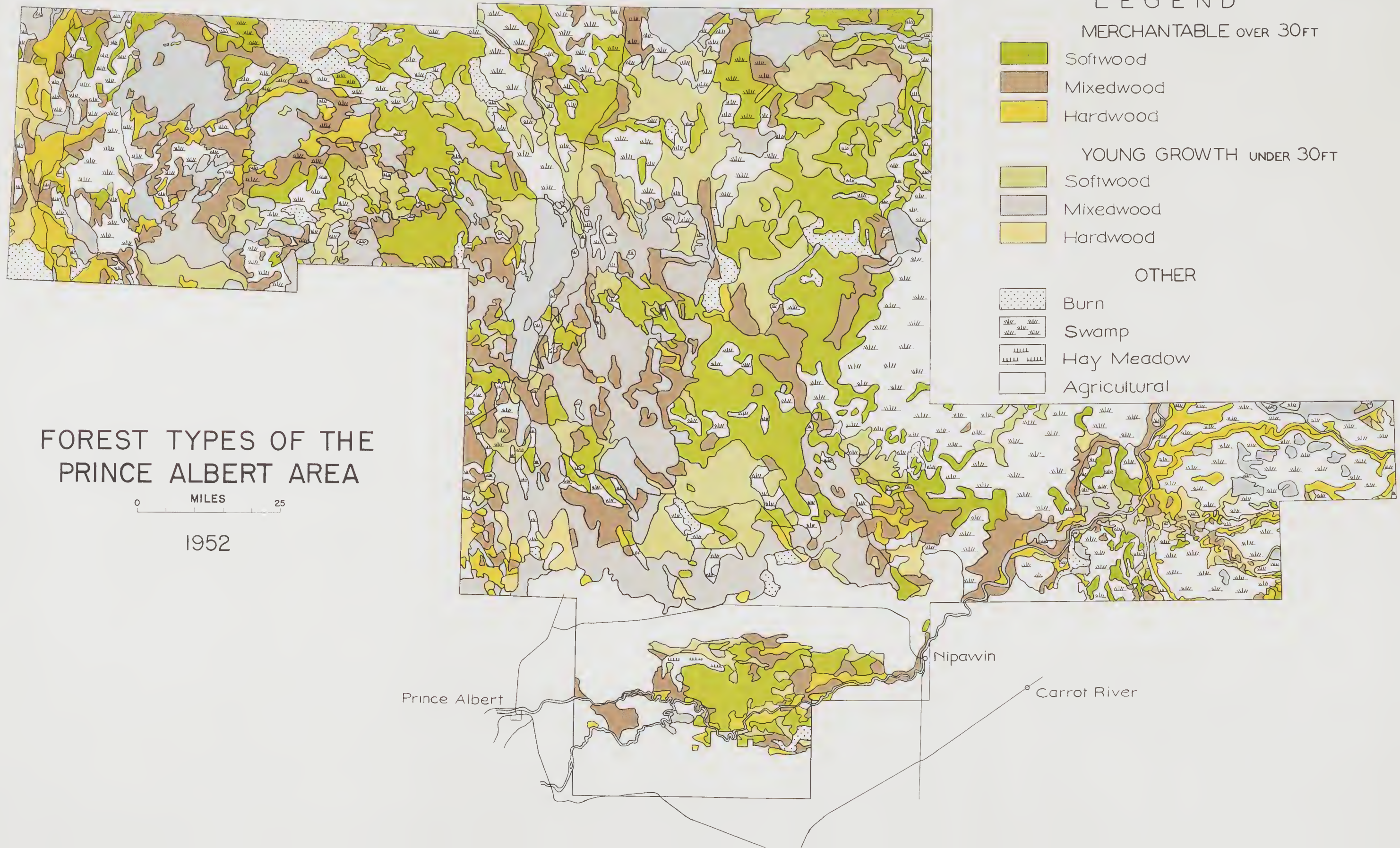
### SOFTWOODS

- |              |   |   |
|--------------|---|---|
| White spruce | — | <i>Picea glauca</i> (Moench) Voss.      |
| Black spruce | — | <i>Picea mariana</i> (Mill.) B.S.P.     |
| Jack pine    | — | <i>Pinus Banksiana</i> Lamb             |
| Balsam fir   | — | <i>Abies balsamea</i> (L.) Mill.        |
| Tamarack     | — | <i>Larix laricina</i> (Du Roi) K. Koch. |

### HARDWOODS

- |                |   |   |
|----------------|---|---|
| White poplar   | — | <i>Populus tremuloides</i> Michx.   |
| Black poplar   | — | <i>Populus balsamifera</i> L.   |
| White birch    | — | <i>Betula papyrifera</i> Marsh.   |
| Green ash      | — | <i>Fraxinus pennsylvanica</i> Marsh.<br>var. <i>lanceolata</i> (Borkh.) Sarg. |
| Manitoba maple | — | <i>Acer Negundo</i> L.<br>var. <i>interius</i> (Britton) Sarg.                |
| White elm      | — | <i>Ulmus americana</i> L.   |









SD 2 S25 S252 NO-2 1953  
SASKATCHEWAN FOREST INVENTORY  
DIVISION  
FOREST INVENTORY SERIES  
SERIAL M1 39648604 SCI



\*000040546640\*

DATE DUE SLIP


SD 2 S25 S252 no.2, 1953  
Saskatchewan. Forest Inventory  
Division.  
Forest inventory series  
39648604 SCI

ONE WEEK LOAN

**B42894**

